

REMARKS

Applicants respectfully request the Examiner to reconsider the present application in view of the foregoing amendments to the claims.

Status of Claims

In the present Reply, claim 1 has been amended and claims 6-8 have been added. Thus, claims 1-8 are pending in the present application.

No new matter has been added by way of the amendment to claim 1 or by new claims 6-8. Support for the amendment to claim 1 is found in the present specification at least at page 4, lines 13-15. Claim 6 has been added for the Examiner's consideration. Support for claim 6 can be found in original claims 1 and 3 and in the present specification at pages 3-4, the bottom of page 9 and the top of page 11. Support for new claims 7-8 is found in originally-filed claims 4 and 5 and in the present specification at page 4, lines 19-23. Thus, no new matter has been added.

Based upon the above considerations, entry of the present amendment is respectfully requested.

In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

Double Patenting Rejection

Claims 1-5 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending

Application No. 10/676,146 (see paragraph 1 of the Office Action). Because this is a provisional rejection, the Examiner is respectfully requested to hold this rejection in abeyance until either the present application or the copending '146 application issue as a U.S. patent. *See* M.P.E.P. § 822.01.

Issues Under 35 U.S.C. § 103(a)

Claims 1, 2, 4, and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Aoki '386 (U.S. Appl. Publication No. 2002/0013386 A1) in view of Cifuentes et al. '360 (U.S. Patent No. 5,508,360) (see paragraphs 2-5 of the Office Action). This rejection is respectfully traversed, and reconsideration and withdrawal thereof are respectfully requested based on the following.

The Features and Unexpected Advantages of the Present Invention

The present invention provides a silicone adhesive capable of developing initially pressure-sensitive adhesion (or tackiness) and subsequently a strong bond (or adhesiveness) to a substrate through brief heat compression. With the present invention, the present inventors discovered that by compounding (A) a crosslinkable organopolysiloxane partial condensate composed of a chain like organopolysiloxane and a solid silicone resin with (B) a specific silane or siloxane compound as defined above, a silicone adhesive is formulated which can be sheeted into an adhesive film. Thus, such a silicone adhesive can develop an initial pressure sensitive adhesion (or tackiness) and subsequently form a strong bond to a substrate through brief heat compression so that it is applicable as the dicing/die bonding layer.

Even the advantages of the present invention have been experimentally confirmed. In this regard, the present specification shows the unexpected results of the present invention in the Examples at pages 16+. For instance, Table 1 on page 20 shows unexpected results of better adhesiveness or bond strength for five Inventive Examples of the present invention.

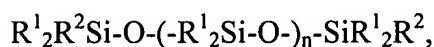
In contrast, the cited combination of references fails to disclose such unexpected results, and the references have been improperly combined. Applicants first discuss the disclosure of each reference, and then comment on how the instant rejection has been overcome.

Distinctions over Aoki '386 and Cifuentes '360

The cited primary reference of Aoki '386 discloses a silicone-based pressure-sensitive adhesive composition which comprises as a uniform blend (A) and (B):

(A) 100 parts by weight of a silicone ingredient which is a combination, either as a mixture or as a condensation product, of

(a) a diorganopolysiloxane represented by the general formula



in which R^1 is a monovalent hydrocarbon group having 1 to 10 carbon atoms, R^2 is a hydroxyl group or R^1 and the subscript n is an average number not smaller than 500, and

(b) an organopolysiloxane consisting of monofunctional siloxane units of the formula $R^1_2R^2Si_{0.5}$, in which R^1 has the same meaning as defined above, and tetrafunctional siloxane units of the formula SiO_2 in a molar ratio of the monofunctional siloxane units to the tetrafunctional siloxane units in the range from 0.6 to 1.3,

the weight proportion of the diorganopolysiloxane (a) to the organopolysiloxane (b) being in the range from 80:20 to 20:80; and
(B) from 0.5 to 5.0 parts by weight of a 4,4'-dialkyl dibenzoyl peroxide represented by the general formula (II):



wherein each R is, independently from the other, an alkyl group having 1 to 12 carbon atoms and Pn is a 1,4-phenylene group, as a curing agent of the component (A) (see paragraphs [0010]-[0017] on pages 1-2 of Aoki '386).

However, Aoki '386 fails to disclose, teach or suggest the use of the specific silane or siloxane compound (B) of the present invention, and as further stated on page 4 of the Office Action. The secondary reference of Cifuentes '360 is cited to account for this deficiency in the primary reference.

At column 2, Cifuentes '360 discloses a moisture-curable silicone composition comprising:

(A) an organopolysiloxane resin comprising $R_3SiO_{1/2}$ siloxane units bonded to the $SiO_{4/2}$ siloxane units wherein R is selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals; and curing radicals of the formula - $SiY_2ZNY'ZSiR^1_xY''_{3-x}$ wherein R^1 is a monovalent hydrocarbon radical; each Z is a divalent linking group; each Y is independently selected from the group consisting of a monovalent organic radical, an enoloxyl radical, an alkoxy radical, and an oximo radical; Y' is selected from the group consisting of a monovalent organic radical, a hydrogen

atom, and $-ZSiR^1_xY''_{3-x}$; Y'' is selected from the group consisting of an enoloxyl radical, an alkoxy radical, and an oximo radical; and subscript x has a value of 0 or 1; and

(B) a diorganopolysiloxane polymer, each terminal group thereof containing at least one silicon-bonded hydrolyzable functional radicals selected from the group consisting of alkoxy radicals having 1 to 4 carbon atoms, ketoxime radicals, enoloxyl radicals, aminoxy radicals, acetamido radicals, N-methylacetamido radicals and acetoxy radicals; said polymer having a viscosity at 25°C of 20 to <100,000 mm/s and the weight ratio of said resin to said polymer being in the range 5:95 to 90:10.

Also, Cifuentes '360 discloses that the composition optionally contains:

(C) sufficient catalyst to accelerate the cure of the composition;
(D) a silane of the formula $R^2_{4-y}SiX_y$ or oligomeric reaction product thereof, in which R^2 is selected from the group consisting of hydrocarbon radicals and substituted hydrocarbon radical having 1 to 6 carbon atoms, X is a hydrolyzable group and y is 2 to 4; and
(E) a filler.

However, as mentioned, Cifuentes '360 provides a moisture curable composition (see, e.g., column 2, lines 25-27), wherein it takes relatively longer lengths of time to exhibit the desired adhesiveness. This feature is not only inconsistent with the present invention, but one of ordinary skill in the art would understand that the Cifuentes '360 is inconsistent with the primary reference of Aoki '386 as well.

(i) Cifuentes '360 versus the present invention

Specifically, in contrast to Cifuentes '360, the present invention is directed to a silicone adhesive that exhibits an initial tackiness (or pressure-sensitive adhesion) sufficient to fix and secure a substrate for allowing a desired step (cutting or the like) to be performed on the substrate. In addition, by press bonding another substrate to the adhesive-bearing substrate and heating them, the substrates can be firmly bonded together. Cifuentes '360 fails to teach or suggest the claimed inventive adhesive, as well as the unexpected features thereof relating to the initial tackiness and firm bonding thereafter.

Furthermore, regarding the component (B) of Cifuentes '360, the first paragraph of column 8 states:

The preparation of diorganopolysiloxane polymers having such alkoxy terminal groups is described in detail in above cited U.S. Pat. No. 5,470,923 hereby incorporated by reference to teach these preparative methods. Alkoxy functional groups having the representative formulae $(MeO)_3SiO^-$ and $Me(MeO)_2SiO^-$ can be introduced into a silanol-terminated diorganopolysiloxane by compounds having the formulae $(MeO)_4Si$ and $Me(MeO)_3Si$, respectively, as is well known in the art.

Also, column 8, sixth paragraph of Cifuentes '360 states:

Another method for preparing hydrolyzable-functional diorganopolysiloxane (B) is to react a hydroxyl-functional diorganopolysiloxane with a hydrolyzable-functional silane. This reaction is typically conducted in the presence of a suitable catalyst such as an alkyl titanate . . .

Thus, the siloxane polymer used in Cifuentes '360 is different from the organopolysiloxane partial condensate of component (i) and (ii) according to the presently claimed invention. One of skill in the art would not even refer to the Cifuentes '360 reference in an effort to achieve what is instantly claimed.

(ii) Cifuentes '360 inconsistent with primary reference

In addition, the siloxane polymer is inconsistent and different from the organopolysiloxane used in Aoki '386. This is more apparent upon a reading of column 8, first and sixth paragraphs, of Cifuentes '360 as discussed above. In this regard, U.S. case law squarely holds that a proper obviousness inquiry requires consideration of three factors: (1) the prior art reference (or references when combined) must teach or suggest all the claim limitations; (2) whether or not the prior art would have taught, motivated, or suggested to those of ordinary skill in the art that they should make the claimed invention (or practice the invention in case of a claimed method or process); and (3) whether the prior art establishes that in making the claimed invention (or practicing the invention in case of a claimed method or process), there would have been a reasonable expectation of success. *See In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991). Here, because the moisture curable composition and use of siloxane polymer in Cifuentes '360 is different from the composition disclosed in Aoki '386, one of ordinary skill in the art would not be motivated and/or reasonably expect to be successful in combining these references in order to achieve what is instantly claimed. Such inconsistencies between the references, or between the present invention and the references, have not been accounted for in the Office Action. Thus, the instant rejection under § 103(a) is improper.

The Examiner also states in the Office Action that the motivation to combine the two cited references lies in how Cifuentes '360 discloses advantages in using its silanes. However, Cifuentes '360 discloses such advantages with respect to its moisture curable composition, which is not the same type of composition used in Aoki '386. Further, Cifuentes '360 labels the silane as component (D), wherein component (D) is to be used with components (A) and (B) to make up the moisture curable composition [having components (A)-(E)] in Cifuentes '360 (see column 2, lines 25-51). Component (D) is not suggested to be used in other types of compositions, like that in Aoki '386. Further, component (D) in the secondary reference is used to "consume any water" (see column 9, line 33) that is present in the "moisture curable composition". In this regard, Applicants respectfully submit that while the reference need not expressly teach that the disclosure contained therein should be combined with another, *see Motorola, Inc. v. Interdigital Tech. Corp.*, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997), the showing of combining references "must be clear and particular". *See In re Dembiczak*, 175 F.3d 994, 998, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Here, there is no guidance in either one of the cited references to achieve the formulations as presently claimed. Instead, Cifuentes '360 discloses a component (D) to reduce the water in the moisture curable composition, wherein such a composition takes even longer to even exhibit desirable adhesiveness. Thus, the requisite motivation is lacking. *In re Vaeck; Dembiczak*.

Applicants' position that the skilled artisan would not combine the moisture curable composition of Cifuentes '360 with the different composition of Aoki '386 is also supported by the *In re Gordon* decision. That case holds that the mere fact that disclosures can be combined does not make the combination obvious unless the art also contains something to suggest the

desirability of the combination. *See, In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984) and *In re Imperato*, 179 USPQ 730, 732 (CCPA 1973). Applicants respectfully submit that the suggestion of desirability is lacking here given the disclosure in the cited references, wherein the reasons for combining Aoki '386 with Cifuentes '360 as stated in the Office Action is insufficient to meet the requisite level of motivation and/or reasonable expectation of success due to the technological inconsistencies between the two references.

In addition, Applicants respectfully submit that an impermissible level of hindsight reconstruction has been used to form the instant rejection. Applicants note that "It is wrong to use the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit." *Orthopedic Equip. Co., Inc. et al. v. United States*, 217 USPQ 193, 199 (Fed. Cir. 1983). Here, only an improper level of hindsight reconstruction can lead to the achievement of the present invention and its unexpected advantages. Withdrawal of this rejection is respectfully requested.

Applicants also respectfully submit that the requisite reasonable expectation of success is lacking for another reason. "Obviousness requires one of ordinary skill in the art have a reasonable expectation of success as to the invention—'obvious to try' and 'absolute predictability' are incorrect standards." *Velander v. Garner*, 68, USPQ2d 1769, 1784 (Fed. Cir. 2003) (citing *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673 (Fed. Cir. 1988)). Here, Applicants respectfully submit that an improper "obvious to try" rationale is being used to form the instant rejection due to the reliance on Aoki '386 and Cifuentes '360 merely being in analogous art (see the Office Action at page 5, lines 1-3).

Applicants also maintain that an improper “obvious to try” rationale is being used in the Office Action citing how Cifuentes ‘360 teaches advantages in using silanes. Such use is with respect to the Cifuentes ‘386 moisture curable composition, wherein Aoki ‘386 is directed to using a condensation product of the organopolysiloxane and the peroxide curing agent. Furthermore, the use of silanes in Cifuentes ‘360 is optional (see column 2, line 51). Applicants respectfully submit that this part of the Cifuentes ‘360 reference does not equal disclosure to achieve the present invention because options presented (e.g., optional component (D)) amounts to an “obvious to try” rationale, wherein the “obvious to try” rationale is improper for an analysis of patentability under § 103(a) under *Velander* or *In re Fine*. 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1599 (CAFC 1988). Applicants note that in the *In re Fine* decision, the CAFC reversed the BPAI by stating: “The Board reiterated the Examiner’s bald assertion that “substitution of one type of detector for another in the system of Eads would have been within the skill of the art,” *but neither of them offered any support for or explanation of this conclusion.*” (emphasis added). See also *In re Deuel*, 34 USPQ2d 1210, 1216 (CAFC 1995) (where the court states: “Obvious to try” has long been held not to constitute obviousness. A general incentive does not make obvious a particular result, nor does the existence of techniques by which those efforts can be carried out”) (citing *In re O’Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1680-1681 (CAFC 1988)). Thus, a *prima facie* case of obviousness has not been established because the requisite reasonable expectation of success is lacking. *In re Vaeck*.

Thus, based on the above, Applicants respectfully request reconsideration and withdrawal of this rejection as a *prima facie* case of obviousness not being established.

Unexpected Results

Applicants respectfully submit that the present invention has achieved unexpected results, whereby such results rebut any asserted *prima facie* case of obviousness (whether based on Aoki '386, Cifuentes '360 or any other reference or combinations thereof). As mentioned above (and stated in the Office Action at page 4, lines 13-14), the primary reference of Aoki '386 fails to disclose the instantly claimed component (B). In this regard, Applicants submit that the composition of Aoki '386 corresponds to Comparative Examples 1 and 2 (at pages 18-19) described in the present specification. Specifically, the Comparative Examples in the present specification lack component (B) (see page 18, last paragraph and page 19, first paragraph).

As can be seen from Table 1 in Applicants' specification, these Comparative Examples demonstrate inferior adhesiveness when compared to the present invention (i.e., the five Inventive Examples). The composition exhibits an initial tackiness sufficient to fix or secure a substrate for allowing a desired step (cutting or the like) to be performed on the substrate. However, in the Comparative Examples, by press bonding another substrate to the adhesive-bearing substrate and heating them, the substrates cannot be bonded together at all without the specific silane or siloxane compound (B) according to the invention. The present invention unexpectedly achieves at least better adhesiveness or bond strength.

Therefore, even if the two references were combined (wherein Applicants respectfully submit that this combination is improper), such an asserted combination of the two references would not achieve the unexpected features of the present invention. More particularly, the Examiner refers Applicants to the preferred use of glycidoxypropyltrimethoxysilane in Cifuentes '360 (last sentence on page 4 of the Office Action). However, the composition obtained by the

asserted combination of Aoki '386, which discloses the use of condensation product of the organopolysiloxane and the peroxide curing agent, with Cifuentes '360, which discloses the use of glycidoxypropyltrimethoxysilane, is out of the present inventive scope. Instead, the feature of the inventive adhesive possessing excellent adhesion to a variety of substrates, and thereby developing permanent adhesion upon heating, is not expected from the combination of the cited references.

Thus, Applicants respectfully submit that the instant rejection has been overcome based on the unexpected results for the present invention. Reconsideration and withdrawal of this rejection are respectfully requested.

New Claims 6-8

Applicants also request favorable action on the new claims as presented herein. Applicants note that new claim 6 incorporates the subject matter of original claim 3.

Conclusion

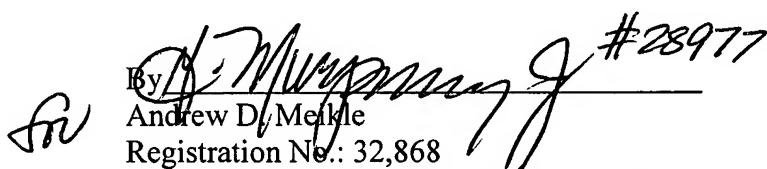
A full and complete response has been made to all issues as cited in the Office Action. Applicants have taken substantial steps in efforts to advance prosecution of the present application. Thus, Applicants respectfully request that a timely Notice of Allowance issue for the present case.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact Eugene T. Perez (Reg. No. 48,501) at the offices of Birch, Stewart, Kolasch & Birch, LLP.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Dated: July 27, 2005

Respectfully submitted,

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